The Expert's Guide To

Implementing Microsoft® Windows® Vista™

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eBook

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Contents

Introduction

Even before its release for mainstream consumer use, much of the hype behind the launch of Microsoft's latest operating system—Windows Vista—has settled. Five years of development and millions in marketing have come to an end, now it's time to get down to some serious evaluations and answer some serious questions: When should we deploy Windows Vista? What's our return on investment? What kind of resources will it take to implement it?

These are tough questions to answer, especially for IT professionals responsible for hundreds or thousands of Windows desktops in an enterprise environment. Not only is Vista the most complex release of Windows in Microsoft's history, but it will also have a huge impact on infrastructure of an enterprise. Vista requires a lot more computing power, memory, and graphics than its predecessors. On the upside, it contains features that increase security, improve end users' productivity, and tools that simplify and accelerate deployment and maintenance.

Providing information that will help IT professionals decide when to deploy Vista, and what methodologies to use, is the overall objective of this eBook. We are especially interested in providing information to IT organizations that manage a large population of desktops across an enterprise. These organizations are responsible for maintaining (or increasing) satisfaction and productivity of the user community, reducing costs, and hitting bottom-line budgets, all while performing what is probably the largest operating environment migration in any organization's history.

In this eBook we will cover some basics, such as "What exactly is Windows Vista?" and "How should we plan for deployment?" Looking deeper into the impact on an enterprise, we'll cover significant areas of change, including security, management and operations, and networking differences. Finally, we'll discuss specific deployment methodologies, tools that are available, and different ROI scenarios. So buckle up, grab some manuals, and let's begin!

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Chapter 1
What is Microsoft® Windows® Vista™?
Background

Windows Vista is the latest release of Microsoft's Windows operating environment. According to Microsoft, the name "Vista" was chosen because it delivers a "personal vista" for its users. Referencing the Merriam-Webster dictionary, a vista (noun) is "a distant view through or along an avenue or opening"—although the best definition we've seen is more along the lines of "a pleasing view, especially one seen through a long, narrow opening." Regardless, the implication is that the experience will be pleasing, productive, and safe. Microsoft wants consumers to think of Vista as something that will bring clarity to their world, allowing the users to focus on what's important (instead of the focusing on the tools that get them there).

Vista development began in late 2001, and was based on the then-Windows XP code base. Microsoft had multiple goals in the next release of Windows, notably 64-bit capabilities, a new file system, improved reliability and security, and a revamped user interface. However, in mid-2004, Microsoft reset the code base, largely because of difficulties in keeping up with the rapid changes that were occurring in Windows XP (e.g., Service Pack 2). With the reset, Windows Server 2003 became the new base for Vista (codenamed "Longhorn[1]"). Vista ended up being based upon large portions of Windows XP with Service Pack 2, especially in the area of security, and Windows Server 2003[2].

Microsoft released various beta releases to developers throughout 2003-2005, with initial public release to volume licensed users on November 30, 2006. During the preview period, Microsoft was making decisions on what functionality would be included in the final release, and a fair number of features never made the final release (or were packaged differently, more on that later). A new underlying file system (WinFS), and a security framework based on the Next-Generation Secure Computing Base (NGSCB) were notable omissions from the final release. It is generally acknowledged that Microsoft scaled back the introduction of new technology in the interest of security and reliability of the initial release of Vista.

What's new

While there is a long list of new-and-improved features, Windows Vista is more than that. Microsoft has gone to great lengths to improve overall acceptance of a computer, and its operating system, as an integrated part of a user's work and entertainment.

The Vista "experience"

Before we begin a feature-by-feature list, a short discussion about the overall "experience" of using Vista is in order. Microsoft uses the word "experience" often in their Vista marketing materials. There is obviously a concerted effort to more fully engage end users—to give them the feeling that the operating environment is their friend (not dissimilar to what Apple has done with the Macintosh over the years). From the box it

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[1]The Windows XP codename was "Whistler," and the codename for Vista was originally "Blackcomb"—both ski areas in British Colombia. The current release of Vista was intended to be an interim release between the two; the codename "Longhorn" came from a bar that is between the two resorts.
[2]"Windows Vista Product Guide," November 2006.

comes in, to the startup screen, to the translucent, glass-like windows on the desktop, Vista has a much more "modern" look to it (although you can dumb it down to the good old Windows XP look if you're inclined). There are new high-quality wallpapers, system icons, and new system sounds (composed by Robert Fripp, one of the founders of progressive rock group King Crimson[3])—all of which are design to give users a feeling that Vista is designed for them, and will provide security, a pleasant experience, and, well, a great vista of their computing world (sorry).

The experience isn't limited to end user consumers. Vista sports a wide collection of new features, cleverly packaged and marketed, to assure businesses of increased security, reliability, and productivity. The "experience" is intentionally extended to include business owners and IT professionals.

A last important word about the Vista experience: it's not free. All of this technology requires a great deal of computing power. The new user interface takes one or more graphics cards that just a few years ago would be considered high-end. And, of course, a basic premise of Vista is that the system is connected to the Internet with a high-speed connection (although it's not necessary, things work a lot more smoothly with such a connection). However, Microsoft has cleverly made the need for new hardware less painful by providing different experience levels based on your system's hardware configuration (processor speed, memory size and speed, etc.). In fact, there is a software tool that will measure your "Vista experience index" based upon an inventory of the hardware available on your system[4].

Packaging and Editions

Marketing 101 dictates that consumers are presented with a choice of options for a particular product. First, it increases the likelihood of a sale when the consumer is asked to choose between option "A" or option "B," second, multiple options offer the vendor multiple price points and an opportunity to increase profits. For example, many consumers were willing to pay incrementally more for Windows XP Professional Edition over Windows XP Home Edition.

For the release of Vista, Microsoft stepped up the multiple-options concept a notch, and releases Vista in multiple option levels, or "editions." Conceptually, the different editions address different needs of the diverse user base, allowing consumers to somewhat tailor the release to their specific needs. There are essentially six editions of Vista[5], described briefly below. For an overview of the feature set in each, see Table 1.

Windows Vista Starter

"Starter" is designed for beginning PC users and low-cost, lower-level functionality. It is not currently available in the United States or "other high income markets as defined by the World Bank.[6]"

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[3]http://www.microsoft.com/whdc/resources/news/newsletters/MHN_012006.html
[4]http://windowshelp.microsoft.com/Windows/en-US/Help/f59082f4-6385-4a61-ba7e-2de9625a780a1033.mspx
[5]There are actually more, including some European editions that ship without Windows Media-related technologies.
[6]http://www.microsoft.com/windowsvista/getready/editions.

Table 1. An overview of new features and Vista editions

	Home Basic	Home Premium	Business	Enterprise	Ultimate
Security • Windows Defender • Windows Firewall • User Account Control	✓	✓	✓	✓	✓
Quickly find what you need • Desktop Search • Search Folders • Windows Internet Explorer 7	✓	✓	✓	✓	✓
Windows Aero desktop experience • Windows Flip • Windows Flip 3D • Aero Glass		✓	✓	✓	✓
Best choice for laptops • Power Management • Windows Mobility Center • Tablet PC support • Sync Center • Presentation settings • Network Projection		✓	✓	✓	✓
Collaborate and share documents • Windows Meeting Space		✓	✓	✓	✓
Experience photos and entertainment • Windows Media Center		✓			
Help protect against hardware failure • Built-in diagnostics • Business backup features			✓	✓	✓
Business networking • Remote Desktop • Network Center • Network Explorer & Map • Network Awareness • Network Diagnostics			✓	✓	✓
Better protect your data • BitLocker™ Drive Encryption • Encrypting File System • Control over USB devices				✓	✓

Windows Vista Home Basic

A stripped-down edition, "Basic" is for the cheapest of buyers. With a full price of $199 (only $40 less than Home Premium, below) and much of the useful functionality removed, Basic is for users that need simple Internet access (e.g., a browser) and email.

Windows Vista Home Premium

Home Premium contains nearly everything an average home user would need, including the Aero user interface, digital media features (including Windows Media Center), and scheduled backup utility. Home Premium is the "standard" home edition, and is roughly equivalent to Windows XP Media Center Edition.

Windows Vista Business

Vista Business is equivalent to Windows XP Pro, and contains all of the manageability, security, and reliability features that business users expect from the Windows OS. Microsoft touts the Business edition as being designed to "meet the needs of business organizations of all sizes," although large installations would probably deploy Enterprise.

Windows Vista Enterprise

Vista Enterprise is similar to Business, with nearly the same feature list. However, Enterprise is oriented toward large, global organizations and is available only to volume license customers that have systems covered by Microsoft Software Assurance programs. Enterprise has one major feature that Business does not: Windows BitLocker Drive Encryption. BitLocker Drive Encryption encrypts and entire Windows volume, and includes integrity checking to detect tampering.

Windows Vista Ultimate

Vista Ultimate combines all of the features of Home Premium and Business. In an enterprise environment, Ultimate provides the security and manageability of Vista Business with the digital entertainment features required by only a small percent of business users.

Because our emphasis is on Windows deployment within an enterprise, the Vista Business and Vista Enterprise editions will be our focus for the remainder of this book.

New User-Visible Features

Well begin our exploration of Vista Business and Enterprise editions with an overview of the new features. While this list is not exhaustive, we will present what are arguably some of the more important, consumer-oriented features. Because there are so many things "new and improved," we've broken them into some rudimentary categories—most of which contain features that are directly (or nearly directly) observable by end users. In a later chapter, we will delve into the changes that are important to IT professionals and are more behind the scenes: security, networking, management and operations, and performance features.

User Interface

The changes that are most noticeable in Vista (obviously) are the visual ones—changes in where items appear on screens, methods of navigation and/or colors and textures. Appearance and user interface (UI) improvements are generally to increase productivity, and in most cases, to influence the user's experience (see The Vista "experience", above).

Underlying many of the appearance changes is the **Windows Display Driver Model (WDDM)**. WDDM anticipates additional functionality from next-generation graphics devices, and allows for scalability of graphics functionality based on available hardware. For example, if a WDDM-capable graphics card is present, Vista will use the Windows Aero interface (see below); if not, Vista will run but without the Aero user interface.

Other new interface and productivity features are described in the following sections.

Desktop and Appearance

There are many changes (over Windows XP) in the overall appearance of Vista. Most of the changes are to improve the "experience" and make interacting with Vista more appealing and personal. While concepts such as the Start Menu and Explorer Windows

remain the same, interaction with them has become more intuitive and consistent across the entire system. For example, the start menu is still in the lower left corner (sporting a new icon) and its basic functionality remains the same.

The new Start Menu does have some improvements however; it features an interface to Desktop Search (more on that, below), and access to applications has been streamlined away from the cascading "All Programs" menu in Windows XP.

The main windows navigation tool—Explorer Windows—have been completely revamped to be more streamlined, easier to use, and incorporate instant search.

Figure 1. New Explorer Windows features
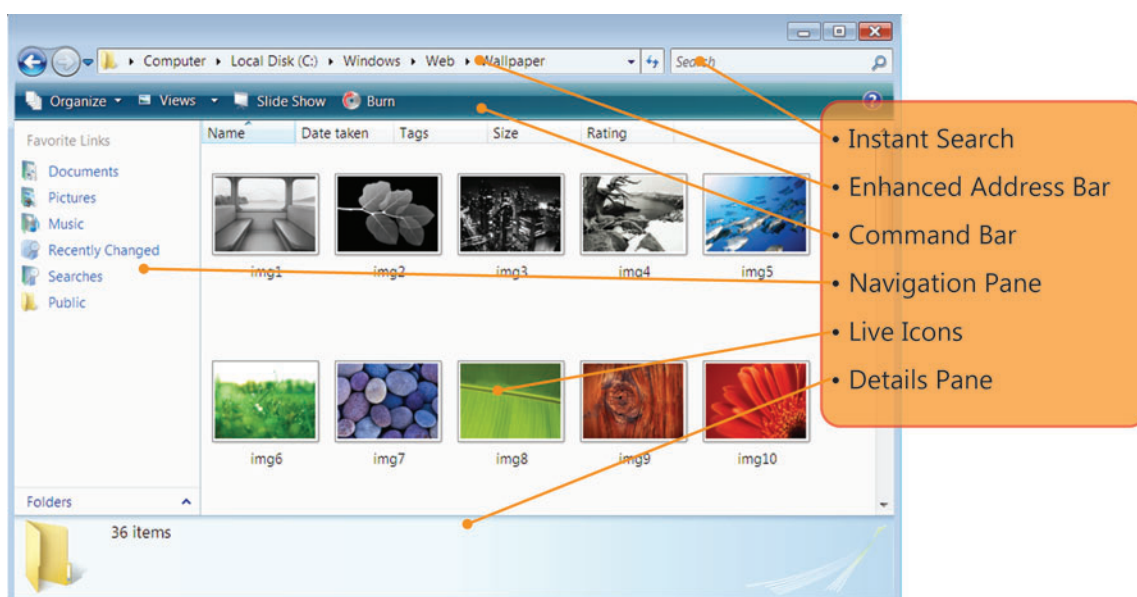
Windows Sidebar and Gadgets are a way of managing "lightweight" utility applications from the desktop. The translucent sidebar contains a user-selectable collection of mini-applications that provide information or execute simple tasks (in fact, gadgets can be scripts) without opening an application. For example, there are gadgets to provide current weather information, stock prices, and news headlines. All are accessible from the sidebar, which can be hidden, on the desktop and resting below windows, or always on top.

Windows Aero
Aero (Authentic, Energetic, Reflective and Open[7]) is large part of the Vista experience. On hardware that supports WDDM, users are presented with a variety of professional visual effects, including translucent windows ("glass"), dynamically minimizing windows, and live taskbar thumbnails. WDDM and Aero provide higher screen resolutions, and smoother movement of windows as they are resized or moved.

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[7]http://windowsvistablog.com/blogs/windowsvista/archive/2006/11/09/the-sounds-of-windows-vista.aspx

**Figure 2. Sample of the 3D Aero interface.**
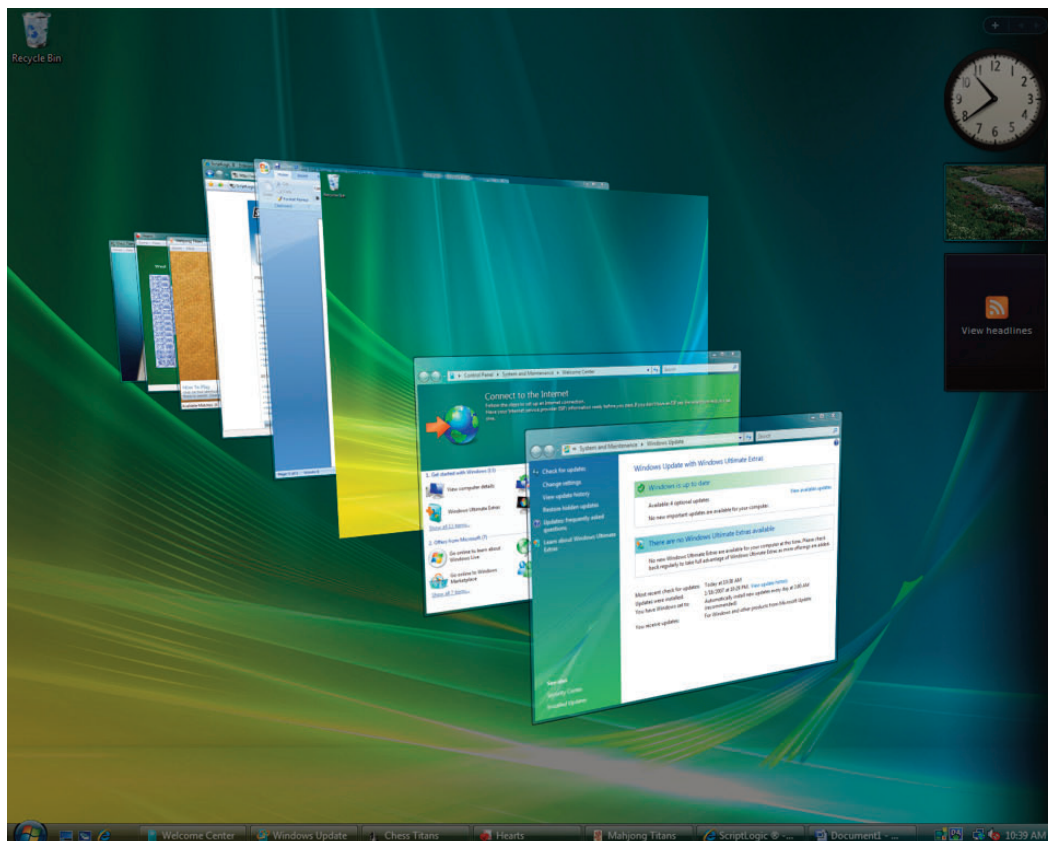
Perhaps one of the more appealing Aero effects is **Windows Flip** and **Windows Flip 3D**. Windows Flip is an update to Alt+Tab feature in Windows XP, used to navigate open applications. Windows Flip shows live thumbnails of open windows instead of generic icons, making it easier to identify windows.

Windows Flip 3D, activated with the Start+Tab keys, dynamically displays all the open windows in a three-dimensional stacked view. Even live processes (such as a video that is playing) are shown in the thumbnails. The entire set of panes can be rotated and scrolled (in fact, you can even view the panes from "the back"—seeing the live thumbnails in reverse!). Navigation is by arrow keys, mouse, or the scroll wheel on the mouse.

Instant Search and Search Folders

Instant Search, and its related feature Search Folders, is an integrated search facility based on a behind-the-scenes indexing capability. The indexing capability provides instant access to filenames, file properties, and text within files.

Every Explorer Window contains an Instant Search field where the user may enter a word, part of a word, or a phrase. Instant Search uses the index and performs a context-sensitive search based on the current navigation location and the current activity, returning the results immediately in the open window. The search can be cleared and a new one begun, or the user has the option of invoking an advanced search (Figure 3), which allows further refinement of the search.

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Figure 3. Instant Search Feature
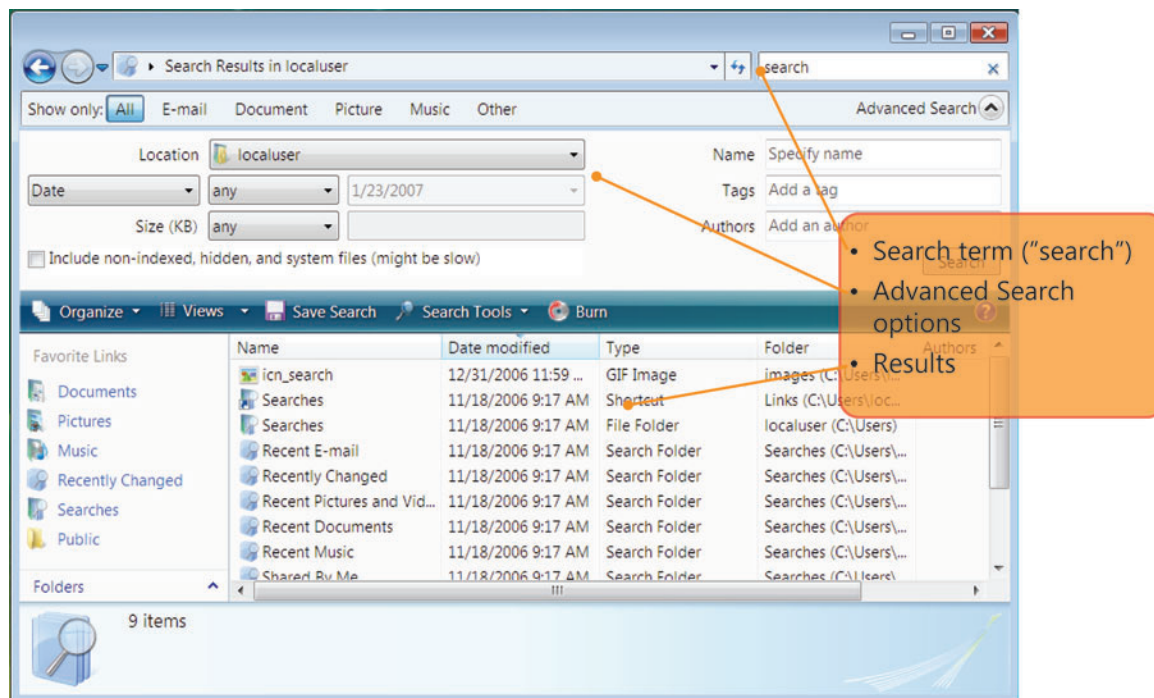
Instant Search criterion can be saved by creating a Search Folder—a virtual folder where the results of the search are kept. Search Folders are updated in real-time, such that changes in files and folders are immediately reflected in the Search Folder itself. For example, we could create a Search Folder that contains documents that have been updated today; as document modification dates change (and obviously the system time changes), different documents will appear in the Search Folder.

XML Paper Specification

Windows Vista introduces The XML Paper Specification (XPS), which is used as a document format, a Windows spool file format, and a page description language (PDL) for printers. XPS is the basis for entirely rewritten document handling and printing subsystems in Vista. Microsoft Office 2007 is based on XPS, but XPS itself is platform independent, openly published, and available royalty-free.

Productivity

Changes in the UI are generally for productivity, however we also include a category of new features specifically designed to increase users' productivity. In many cases, these features are have similar counterparts in Windows XP but with improvements and extensions.

Network and Sharing Center

As its name implies, the Network and Sharing Center brings all network and sharing configuration options into one central location. It allows users to verify that they are connected to a network and whether their system can successfully reach the Internet. The user's view of the network can be graphically displayed via a Network Map (Figure 4), which visually describes the systems, switches, and routers on the network and how everything is interconnected.

Network settings can also be saved to a portable USB flash drive to make adding additional desktops to the network a quick and easy process. Desktops can be configured to interrogate the configuration data on the flash drive, allowing the desktop to join the network.

Figure 4. Network and Sharing Center—Network Map
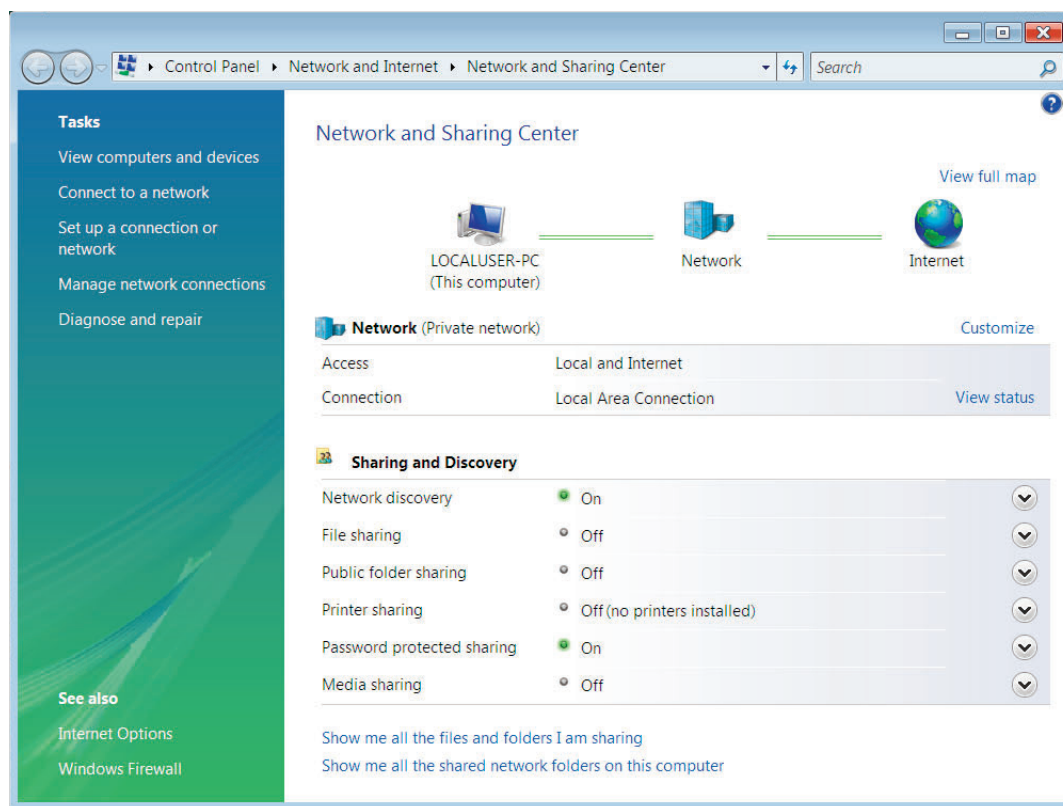
Windows Meeting Space

Windows Meeting Space is a new tool that facilitates collaboration amongst small groups of users. One user initiates a session in Windows Meeting Space; others can join the meeting (with proper authentication) and share files, desktop views, and exchange text messages.

Windows Meeting Space allows participants to start a meeting that enables multi-party file sharing. Users can add a file to the handouts area and everyone instantly receives a copy. If one member of the group makes a change to a file and saves it in the session, those changes are replicated to everyone else in the session. When users leave, they can save a "final" copy of the handout to their local hard drive.

Windows Meeting Space takes advantage of the People Near Me feature, which allows a user to check who is available on the network and invite them to join their collaboration group. People Near Me (PNM) is a new capability of Vista that uses the Microsoft® Windows® Peer-to-Peer Networking platform. It allows applications to discover people connected to the local subnet and invite them into a collaborative activity.

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Corporate Roaming and Offline Files and Folders

As with Windows XP, corporate IT administrators can store selected users (and users' data) on a central server, and have these users access the data remotely. In Windows XP, this was accomplished with Roaming User Profiles and Folder Redirection. However, both of these are inefficient; RUP copied all of the remote data to the mobile device, limiting the amount of roaming data, and FR limits the number (and type) of files roamed.

For organizations that use Group Policy, Windows Vista addresses these issues by allowing the deployment of RUP and FR with local caching enabled. Deploying all of these technologies concurrently achieves the goal of seamless data roaming without sacrificing usability. An administrator can choose to roam only certain user settings but not the bulk of a user's data, such as documents or application data. The roamed user settings will contain the appropriate FR settings, so when a user logs on for the first time, his or her documents will start to synchronize with the PC's local cache. All of that synched content works with the new search and organization features in Windows Vista.

An additional improvement to FR with client caching is support for the "ghosting" of unavailable content. As a user logs on to a PC that is not connected to the network and opens the Documents Explorer, instead of seeing only the files that have been downloaded from the server, the user sees both downloaded files and ghosted items. The ghosted items represent the files that have not been downloaded, preserving the context of the user's files.

FR with client caching in Windows Vista also supports a new feature—Delta Sync—that streamlines the overall sync experience. Delta Sync synchronizes only the changes to a document rather than the entire document when synchronizing from client to server.
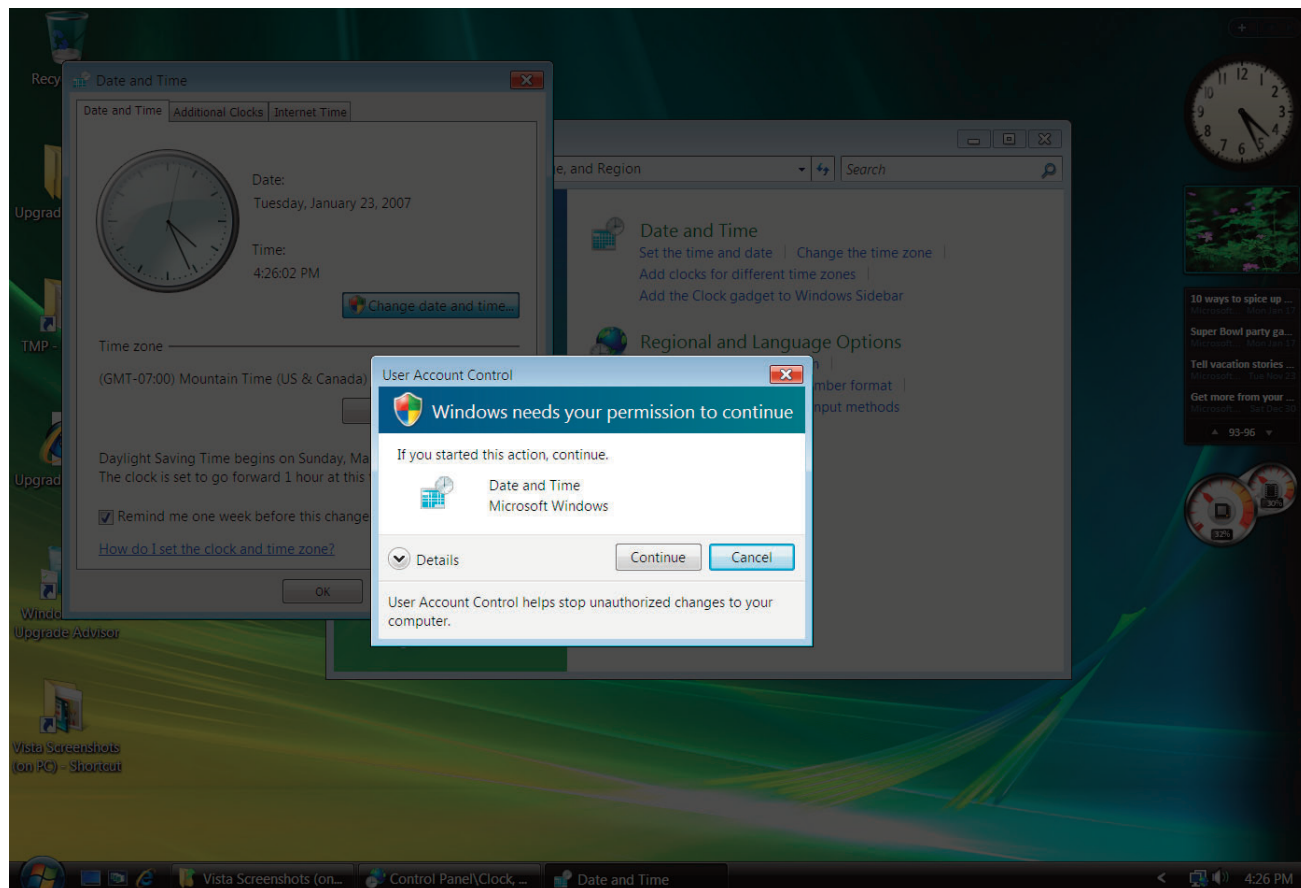
Security

One of the driving forces behind Vista is to improve security over Windows XP. Many of the improvements include extending and improving upon security features from Windows XP SP2. However, as Microsoft states, major improvements require architectural changes that can only be introduced with a new operating system release.

User Account Control (UAC)

User Account Control increases security by allowing users to execute commonly used tasks without requiring administrator privileges. In Windows XP, many of these tasks (e.g., changing time zones, and accessing the system clock and calendar) required administrative privileges. IT managers were faced with giving users full rights to users to allow them to perform these functions, or restrict their rights and face complaints about being too restrictive. With Vista, users are able to accomplish these tasks without having administrator privileges.

An additional feature of UAC is providing feedback whenever a user attempts to perform a task that requires administrator rights. In such a condition, the user is either notified that the task is prohibited, or that administrative credentials are required to proceed (depending on how UAC is configured). Either way, notification of the violation is unmistakable—the entire screen is dimmed and the verification dialog box appears in the center of the screen (Figure 5).

**Figure 5. User Account Control dialog**

Windows Security Center

The Windows Security Center (originally implemented in Windows XP SP2) has been updated to include display of antispyware software status, IE security settings, and status of the UAC. Third party security solutions may also be accessed through the security center, as can Windows Defender and Windows Firewall, explained below.

Windows Defender

Windows Defender (formerly known as Microsoft AntiSpyware) has been updated for Vista to include real-time protection against threats. Windows Defender uses nine security agents to monitor different parts of the system for application behavior that is characteristic of spyware. Generally, Windows Defender is more oriented to individual users whose systems are not centrally managed.

Windows Firewall

Windows Firewall is based on the Firewall found in XP SP2 with some important improvements. First, Windows Firewall has a new management console snap-in named Windows Firewall with Advanced Security (Figure 6), which provides access to many advanced options and enables remote administration via group policy. An important addition is the ability to filter outbound traffic (although it is disabled by default) to thwart "phone home" spyware and viruses.

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Figure 6. Windows Firewall with Advanced Security snap-in dialog
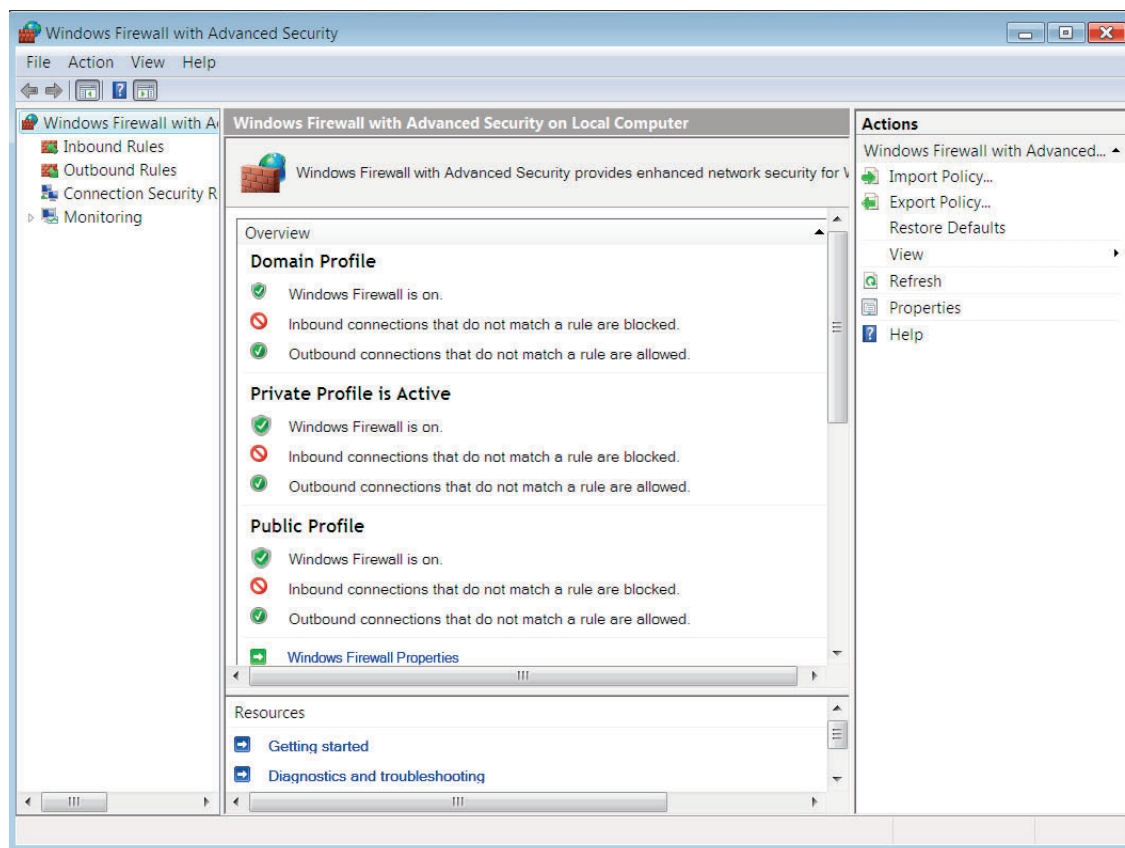
Reliability

Windows Vista has multiple improvements to reliability utilities, as well as some new functionality.

Backup and Restore Center

The Backup and Restore Center is a one-stop place to manage local backup and restore activities. For users that do not have a centrally managed backup/restore process, it makes system backups easy and automatic. The Backup and Restore Center allows users to specify a regular backup schedule, and to backup selected files and folders, or to backup the entire system. Backup can be to CD, DVD, another hard drive, or to another system over the network.

Shadow Copy

An innovation first introduced in Windows Server 2003 is that of Shadow Copy—incrementally saving files that are changed or deleted with an easy-to-use interface that allows the user to selectively and easily restore them. Shadow Copy creates copies of changed files on a scheduled basis, only saving incremental changes to save disk space.

Figure 7. Illustration of Shadow Copy on a file.
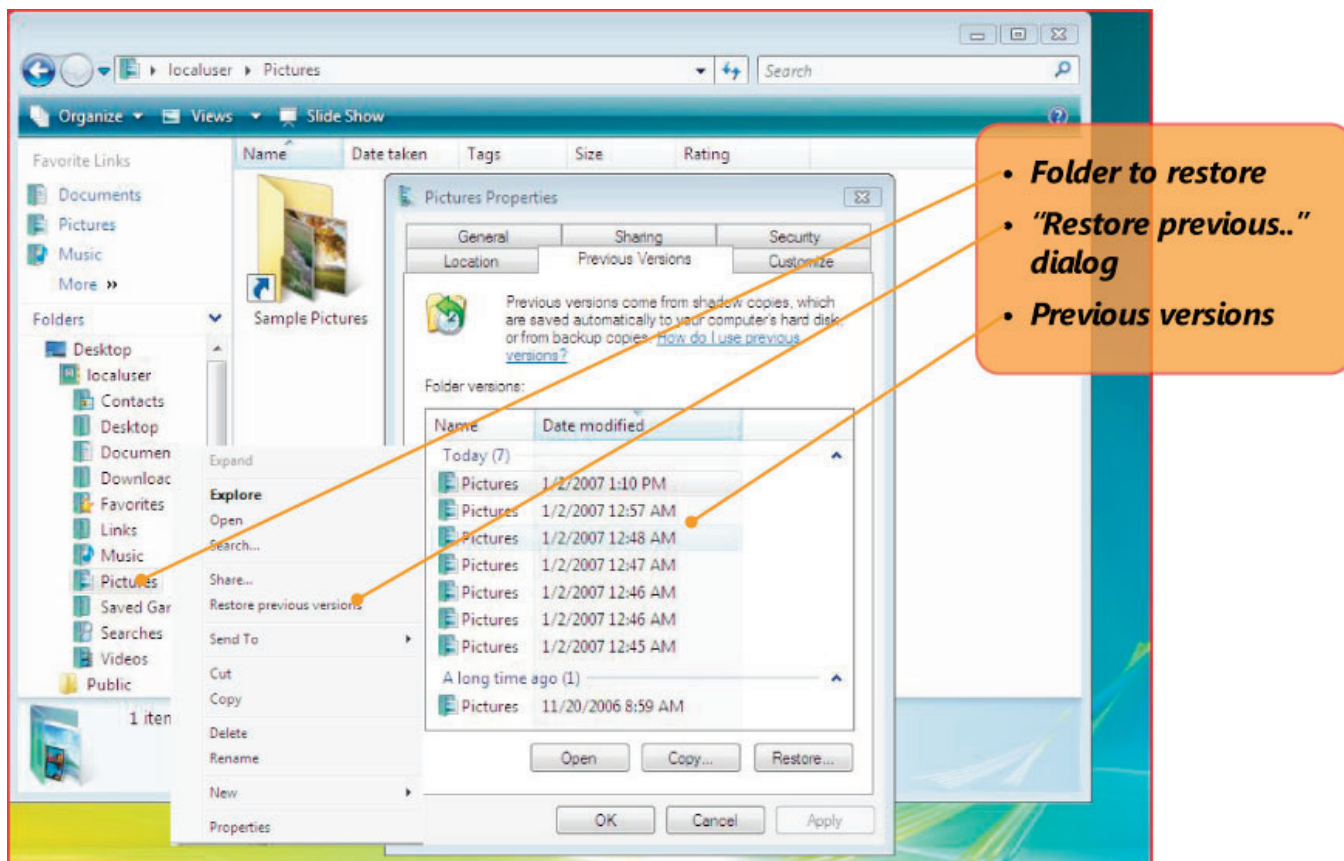
Shadow copy is accessed by right-clicking a file or folder and selecting Restore Previous Versions. It allows the user to go back in time and access files and folders as they were on previous dates. Users are provided with a read-only preview each file to determine which file to restore. When accessing a previous version of a folder, users can browse the folder hierarchy as it was in a previous point in time.

Performance

Windows Vista supports multiple new features aimed at performance. Like much of the rest of Vista, these features scale with the available hardware, and in some cases, anticipate hardware that will be available in the future.

Vista incorporates a new control panel that provides a central point for maintenance of performance issues, including an analysis of the system to determine the Windows Vista Experience Index (described earlier).

Startup, sleep, and shutdown performance

Improvements have been made in startup and shutdown performance (over Windows XP). A new state—sleep—provides a mechanism for turning the computer off without requiring a reboot to restart. The system state is written to memory and disk, and will remain in memory as long as there is power to the system. To save power, the disks and processor(s) are powered off. The benefit of Sleep mode is an operational system within a few seconds after the user pushes the power button.

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Windows SuperFetch

A new technology with Vista, SuperFetch is an intelligent memory management mechanism that attempts to keep most-often used memory pages in memory. However, it goes beyond a simple last-used algorithm; SuperFetch understands which applications are most often used (and even when certain applications are accessed), and preloads these applications into memory to make their invocation faster.

Windows ReadyBoost

ReadyBoost is a quick way of making the system appear as if it has additional memory. ReadyBoost uses a removable flash memory device, such as a USB thumb drive, to keep data that would normally be placed out on a hard drive. System performance is improved because data on the memory device can be accessed faster than out on the disk.

ReadyBoost still writes data to disk though, to prevent data loss if the memory device is removed. In addition, the data on the memory device is encrypted to ensure that unauthorized access to the device will not result in a security breach.

Low-priority I/O

On most desktop systems, multiple applications all have equal priority to the I/O system (especially the disk drives). For example, if a virus scan program is running in the background, disk accesses made by that program have equal priority to other running user applications, and will typically slow down response time to those applications.

Vista has introduced low-priority I/O, the ability for a process to voluntarily have lower-priority access to the I/O subsystem. Some of Vista's internal processes, such as search indexing, disk defragmentation, and Windows Defender's system scan are written to utilize low-priority I/O.
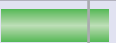
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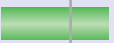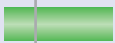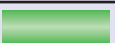
Feature Assessment

We will wrap up this overview of Vista's new features with an admittedly subjective assessment of the impact each feature has on an enterprise. We are assuming a "typical" hypothetical end-user environment, specifically:

• The majority of end users have a few specific applications that are the core of their workload. These applications are centrally managed with some sort of enterprise desktop management tool such as ScriptLogic's Desktop Authority, or are browser-based.

• A large part of the remaining workload is browser-based, searching the Internet and/or executing web-based applications for the enterprise.

• Most of the remaining time is spent with Office applications, including word-processing, creating presentations, and working with email.

For each of the features described in the preceding sections, we make an assessment on the feature's impact on the bottom line; a return on the investment in upgrading the desktop to Windows Vista.

Table 2. An assessment of Vista's new features on end-user productivity.

Feature	Impact on productivity/usefulness			Comments
	-	neutral	+	
User Interface				
Desktop and Appearance		neutral		The new appearance features, while cool, have little effect on end-user productivity. In fact, users will undoubtedly spend time playing with the new features when Vista is first installed.
Windows Aero		neutral		Same as Appearance
Instant Search and Search Folders			+	Instant search will be useful for typical users that often need to find files.
XML Paper Specification	-			XML will, at first, be a detriment to productivity as MS Office documents (and documents outside of MS Windows environment) are converted.
Productivity				
Network and Sharing Center	-			For most enterprise users, the network and sharing center will be of little use.
Windows Meeting Space			+	Windows Meeting Space will be useful for those enterprise users that do not have their own collaboration tools.
Corporate Roaming/ Offline Files and Folders			+	If it works as advertised, Roaming Profiles will be very useful for mobile users.

Feature	Impact on productivity/usefulness			Comments
	-	neutral	+	
Security				
User Account Control (UAC)		▬		User Account control will have little use for in an enterprise environment that is centrally managed. However, if left activated, it may have a slightly negative effect, since it requests verification for almost any control panel activity.
Windows Security Center		▬		Windows Security Center is very similar to the XP SP2 feature. However, increased security will undoubtedly help the enterprise in general, and should reduce incidents caused by malware on end users' systems.the XP SP2 feature. However, increased security will undoubtedly help the enterprise in general, and should reduce incidents caused by malware on end users' systems.
Windows Defender		▬		Ditto
Windows Firewall		▬		Ditto
Reliability				
Backup and Restore Center		▬		Backup and Restore center may help some enterprise users, but in general, this function is centrally managed and will have little impact.
Shadow Copy			▬	Shadow Copy could quite well positively impact end users that are prone to deleting files inadvertently and/or need to retrieve past editions of documents.
Performance				
Startup, sleep, and shutdown performance			▬	Performance in startup, sleep, etc. will have a minor effect on productivity, more so for mobile users.
Windows SuperFetch			▬	SuperFetch will have only a minor affect on end users' performance.
Windows ReadyBoost		▬		It is doubtful that enterprise end users will use an external USB device to increase the performance of their system.
Low-priority I/O		▬		Low-priority I/O will be most useful for background virus protection software, which can rob a system of performance. However, third-party software vendors will have to release new versions of their software to use this feature.

Vista's new features—summary.

In this first chapter, we've taken a high-level look at Windows Vista, and reviewed many of the features that will be most visible to enterprise users and consumers. Many of the features are designed to make the end user feel more "at one" with his/her PC, that is, to improve their "experience." However, except for a few clever features (e.g., Instant Search) these features will probably have minimal impact on the typical enterprise user that is simply trying to improve the bottom line of a corporation.

In subsequent chapters, we will examine new features that have more of an impact on the enterprise—security, networking, and management and operations.